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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,291	01/22/2002	David Silagy	ATOCM-244	4767
23599	7590	03/31/2005	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			ZACHARIA, RAMSEY E	
			ART UNIT	PAPER NUMBER
			1773	

DATE MAILED: 03/31/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/051,291

Applicant(s)

SILAGY ET AL.

Examiner

Ramsey Zacharia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2005 and 15 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13, 16-28 and 35-53 is/are pending in the application.
- 4a) Of the above claim(s) 35 and 36 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2, 8, 15-17, 20-22, 25, 26, 38, 39, 41, 43, 46, 50 and 51 is/are allowed.
- 6) ☒ Claim(s) 1, 3-7, 9-11, 13, 18, 19, 23, 24, 27, 28, 37, 40, 42, 44, 45, 47-49, 52 and 53 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 15 March 2005 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Election/Restrictions***

3. Claims 35 and 36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 29 July 2003. The applicants' request for rejoinder upon the allowance of claim 1 is noted.

### ***Specification***

4. The disclosure is objected to because of the following informalities: the last line of the last page of the specification (i.e. page 20) has been cut off.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. Claims 45, 49, 52, and 53 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claim 45 is rendered indefinite because the claim refers to the "composition according to claim 1" but claim 1 is directed to a thermoforming multilayer film and not a composition.
7. Claim 49 is rendered indefinite because it allows layer (A2) to be beneath layer (B1) while claim 1 requires the film to be formed from successive layers in which layer (A2) would have to be over layer (B1).
8. Claim 52 is rendered indefinite because the meaning of the phrase "wherein said polyolefin wherein the functionalized polyolefin (B3) is either functionalized in either functionalized polyethylene or functionalized polypropylene" is unclear.
9. Claim 53 is rendered indefinite because the meaning of the phrase "wherein the functionalized polyolefin (B3) in either functionalized polyethylene or functionalized polypropylene" is unclear. Replacing the "in" with --is-- is sufficient to overcome this rejection.

Claim 53 is further rendered indefinite because it is unclear whether the claim depends from claim 52 or claim 2.

***Claim Rejections - 35 USC § 103***

10. Claims 1, 3, 5-7, 9-11, 13, 18, 19, 28, 37, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492).

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Roeber et al. teach a composite material comprising: (I) a layer of polyvinylidene fluoride, (II) a layer comprising a polyamide, (III) a layer of a coupling agent having reactive groups, and (IV) a layer comprising a polyolefin (column 2, lines 1-13). Layer (II) corresponds to instant layer (B2), and layer (III) corresponds to instant layer (B3). In addition to the polyvinylidene fluoride, layer (I) can also contain polymers based on polyvinylidene fluoride (column 2, lines 23-25). Suitable polyamides include 6-polyamide, 12-polyamide, and 6,6-polyamide (column 2, lines 30-42). The polyamides also preferably contain amino end groups (column 5, lines 22-28). Suitable coupling agents include a maleic anhydride modified polyethylene, a maleic anhydride modified copolymer of ethylene and propylene (i.e. a polypropylene grafted with the anhydride) (column 8, line 53-column 9, line 8). The coupling agent material may also contain impact-modifying rubbers, such as EPM or EPDM (column 5, lines 4-6). The composite may be formed by coextrusion or pressing, i.e. lamination of preformed films (column 1, lines 58-59). The composite may also contain customary additives (column 5, lines 34-40). In the embodiments of Examples 6-8, layer (I) has a thickness of 100-200  $\mu\text{m}$ , layer (III) has a thickness of 100  $\mu\text{m}$ , and layer (IV) has a thickness of 600-700  $\mu\text{m}$  (Table 3).

The (IV) layer is a polyolefin, such as polypropylene (column 4, lines 61-62). This layer reads on the polyolefin layer (B4) of claim 9 and 13. Furthermore, since layer (B4) is an optional layer, it also reads on the limitations of claims 10, 11, 33, and 34 with the (IV) layer acting as the substrate.

Regarding claim 28, the composite, since it is formed by co-extruding pressing preformed layers together at an elevated temperature (see column 9, lines 20-37), will intrinsically be

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anisotropic as a result of the internal stresses imposed on the material by the manufacturing process.

Regarding claim 37, Roeber et al. discloses an embodiment where additional layers are disposed on layer (IV) opposite layers (I), (II), and (III) (see arrangement No. 3 in Table 1). These addition layers read on the substrate of instant claim 37.

Regarding claim 44, the limitations of this claim are taken directed to the process by which the polyamide is formed and not the polyamide itself. The polyamide itself is still a polyamide with amine end groups, a polyamide that is taught by Roeber et al. Since the determination of patentability for a product claim is based on the product itself and not on the method of production, Roeber et al. meets the limitations of claim 44 unless the applicants can conclusively demonstrate that the polyamide of claim 44 differs in kind from that of Roeber et al. See MPEP § 2113.

Roeber et al. do not teach the presence of an ink layer on the outside of their composite.

However, since the composite is designed for storing or transporting fuels, fluids, water, etc. (column 7, lines 21-34), it would be obvious to one skilled in the art to print on the external surface of the composite as a means of indicating the contents of the tank, supply line, etc. This printed layer reads on layer (A2) while the layer of polyvinylidene fluoride (I) reads on layer (B1).

11. Claims 4, 27, 40, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492) in view of Koblitz et al. (U.S. Patent 3,253,060).

Roeber et al. teach all the limitations of claims 4, 40, and 48, as outlined above, except for the use of a blend of a fluoropolymer and an alkyl (meth)acrylate polymer in place of the polyvinylidene fluoride.

Koblitz et al. teach that the molding properties of polyvinylidene fluoride are improved by blending a minor amount of a polymethylmethacrylate resin with the polyvinylidene fluoride (column 1, line 6-column 2, line 42). The blend has a lower melt viscosity that permits a marked decrease in the molding temperature. The polymethylmethacrylate resin may be a homopolymer of methyl methacrylate or a copolymer of methyl methacrylate and an acid functional comonomer such as methacrylic acid (column 2, line 60-column 3, line 17).

One of ordinary skill in the art would be motivated to blend polymethylmethacrylate with the polyvinylidene fluoride of Roeber et al. to improve the molding properties and lower the molding temperature, thus reducing energy costs associated with production of the composite.

12. Claims 45 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492) in view of Fukushi et al. (U.S. Patent 5,658,670).

Roeber et al. teach all the limitations of claims 45 and 47, as outlined above, except for the use of a polyamide in which all the end groups are amines.

Fukushi et al. teach a method for improving the adhesion between a layer comprising a fluoropolymer, such as polyvinylidene fluoride, and a layer comprising a non-fluorinated polymer, such as polyamide (column 1, lines 13-19). The method comprises mixing a di- or polyamine into the non-fluorinated polymer layer prior to bringing the two layers together (column 2, lines 40-65).



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One of ordinary skill in the art would be motivated to add a di- or polyamine to the polyamide layer (II) of Roeber et al. to improve the adhesion of this layer to polyvinylidene fluoride layer (I).

Polyamides are formed through the condensation reaction of amino-acids or diacids and diamines. In either case, the end groups of polyamides are either unreacted amine groups or unreacted acid groups. A di- or polyamine mixed into a polyamide will be expected to react with any unreacted acid groups. Therefore, the resulting polyamide will have amine end groups either from the end groups of the original reactants or as a result of one amine in the di- or polyamine reacting with the unreacted acid groups.

13. Claims 4, 40, 42, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492) in view of Grunewalder et al. (U.S. Patent 5,332,899).

Roeber et al. teach all the limitations of claims 4, 40, and 48, as outlined above, except for the use of a blend of a fluoropolymer and an alkyl (meth)acrylate polymer in place of the polyvinylidene fluoride.

Grunewalder et al. teach that the adhesion of fluoropolymers to thermoplastic substrates is improved by blending acrylic polymers with the fluoropolymers (abstract). The blend comprises as much as 50% of a first acrylic polymer whose major constituent is methyl methacrylate (column 1, lines 64-67). The preferred fluoropolymer is polyvinylidene fluoride (column 3, lines 9-11).



One of ordinary skill in the art would be motivated to blend polymethylmethacrylate with the polyvinylidene fluoride layer of Roeber et al. to improve the adhesion of the layer to the rest of the laminate.

14. Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roeber et al. (U.S. Patent 5,858,492) in view of Roeber et al. (U.S. Patent 5,474,822).

Roeber et al. ('492) teach all the limitations of claims 23 and 24, as outlined above, except for the thickness of the polyvinylidene fluoride layer. However, the layer is designed to act as a barrier layer (see column 1, lines 11-22 and column 7, lines 11-16) in applications such as fuel lines.

Roeber et al. ('822) is directed to a plastic pipe that may be used to transport fuel (column 1, lines 54-60). The pipe comprises a polyvinylidene fluoride layer (column 2, lines 17-18). When the thickness of the polyvinylidene fluoride layer is 0.10 mm, i.e. 100  $\mu\text{m}$ , a pipe may be formed having outstanding resistance and barrier action against the diffusion of chemicals, solvents, and fuels (column 7, lines 45-58).

One skilled in the art would be motivated to use a polyvinylidene fluoride layer having a thickness of 100  $\mu\text{m}$  because Roeber et al. ('822) teach that a thickness of 100  $\mu\text{m}$  is sufficient to yield a product having outstanding resistance and barrier action against the diffusion of chemicals, solvents, and fuels. The selection of a known material (i.e., polyvinylidene fluoride having a thickness of 100  $\mu\text{m}$ ) based on its suitability for its intended use (i.e. fuel barrier layer) supports a *prima facie* obviousness determination. See MPEP § 2144.07.

***Response to Arguments***

15. Applicant's arguments filed 15 February 2005 have been fully considered but they are not persuasive.

The applicants argue that Roeber et al. disclose a composite used to produce pipes and construction parts, with embodiments in the Examples having thicknesses of about 1 mm. The applicants argue that one skilled in the art would clearly understand that films differ from the comparatively thicker constructs of Roeber et al.

This is not persuasive for the following reasons. The term "film" is not defined as restricted to any particular thickness and there is nothing on the record demonstrating that one skilled in the art would clearly understand a film to differ from the composite of Roeber et al. The lack of distinction between a film and the article of Roeber et al. is further supported by the disclosure in U.S. Patent 5,474,822 that plastic pipes typically have layers having thicknesses as low as 0.05 mm and 0.10 mm, i.e. 50  $\mu$ m and 100  $\mu$ m (see column 7, lines 45-52), which read on the thicknesses recited in instant claims 23 and 24.

***Allowable Subject Matter***

16. Claims 2, 8, 15-17, 20-22, 25-26, 38, 39, 41, 43, 46, 50, and 51 are allowed.

17. Claims 49, 52, and 53 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

18. The statement of reasons for indicating allowable subject matter in independent claims 2, 43, and 46 was presented in the Office action mailed 26 April 2004.

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19. The statement of reasons for indicating allowable subject matter in independent claims 8, 25, and 41 and dependent claim 49 was presented in the Office action mailed 15 October 2005.

***Conclusion***

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney, can be reached at (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
**Ramsey Zacharia**  
Primary Examiner  
Tech Center 1700